```
FILE 'REGISTRY' ENTERED AT 15:37:40 ON 27 OCT 2003

=> S N ACETYL AMINO ACID RACEMASE/CN
L1            0 N ACETYL AMINO ACID RACEMASE/CN

=> S ACETYL AMINO ACID RACEMASE/CN
L2            0 ACETYL AMINO ACID RACEMASE/CN

=> S AMINO AClD RACEMASE/CN
L3            1 AMINO ACID RACEMASE/CN

=> D

L3   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2003 ACS on STN
RN   9068-61-5  REGISTRY
CN   Racemase, amino acid (9CI)  (CA INDEX NAME)
OTHER NAMES:
CN     ***Amino acid racemase***
CN   E.C. 5.1.1.10
CN   L-Amino acid racemase
MF   Unspecified
CI   MAN
LC   STN Files:   AGRICOLA, BIOBUSINESS, BIOSIS, CA, CAPLUS, CEN, TOXCENTER,
       USPATFULL

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
              58 REFERENCES IN FILE CA (1907 TO DATE)
              58 REFERENCES IN FILE CAPLUS (1907 TO DATE)

FILE 'CAPLUS' ENTERED AT 15:40:20 ON 27 OCT 2003

=> S N ACETYL AMINO ACID RACEMASE
       2634107 N
        139553 ACETYL
            61 ACETYLS
        139587 ACETYL
                 (ACETYL OR ACETYLS)
        953125 AMINO
            43 AMINOS
        953143 AMINO
                 (AMINO OR AMINOS)
       3736956 ACID
       1409654 ACIDS
       4198044 ACID
                 (ACID OR ACIDS)
          1152 RACEMASE
           161 RACEMASES
          1174 RACEMASE
                 (RACEMASE OR RACEMASES)
L4           2 N ACETYL AMINO ACID RACEMASE
                 (N(W)ACETYL(W)AMINO(W)ACID(W)RACEMASE)

=> S ACETYL AMINO ACID RACEMASE
        139553 ACETYL
            61 ACETYLS
        139587 ACETYL
                 (ACETYL OR ACETYLS)
        953125 AMINO
            43 AMINOS
        953143 AMINO
                 (AMINO OR AMINOS)
       3736956 ACID
       1409654 ACIDS
       4198044 ACID
                 (ACID OR ACIDS)
          1152 RACEMASE
           161 RACEMASES
          1174 RACEMASE
                 (RACEMASE OR RACEMASES)
L5           1 ACETYL AMINO ACID RACEMASE
                 (ACETYL(W)AMINO(W)ACID(W)RACEMASE)
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=> S L4,L5
L6            2 (L4 OR L5)

=> S N METHYL AMINO ACID RACEMASE
        2634107 N
         876491 METHYL
            614 METHYLS
         876864 METHYL
                   (METHYL OR METHYLS)
         841391 ME
           9505 MES
         847121 ME
                   (ME OR MES)
        1425299 METHYL
                   (METHYL OR ME)
         953125 AMINO
             43 AMINOS
         953143 AMINO
                   (AMINO OR AMINOS)
        3736956 ACID
        1409654 ACIDS
        4198044 ACID
                   (ACID OR ACIDS)
           1152 RACEMASE
            161 RACEMASES
           1174 RACEMASE
                   (RACEMASE OR RACEMASES)
L7              0 N METHYL AMINO ACID RACEMASE
                   (N(W)METHYL(W)AMINO(W)ACID(W)RACEMASE)

=> S N ACETYL GLYCINE RACEMASE
        2634107 N
         139553 ACETYL
             61 ACETYLS
         139587 ACETYL
                   (ACETYL OR ACETYLS)
         130035 GLYCINE
           1663 GLYCINES
         130726 GLYCINE
                   (GLYCINE OR GLYCINES)
           1152 RACEMASE
            161 RACEMASES
           1174 RACEMASE
                   (RACEMASE OR RACEMASES)
L8              0 N ACETYL GLYCINE RACEMASE
                   (N(W)ACETYL(W)GLYCINE(W)RACEMASE)

=> S N ACETYL ALANINEGLYCINE RACEMASE
        2634107 N
         139553 ACETYL
             61 ACETYLS
         139587 ACETYL
                   (ACETYL OR ACETYLS)
                1 ALANINEGLYCINE
           1152 RACEMASE
            161 RACEMASES
           1174 RACEMASE
                   (RACEMASE OR RACEMASES)
L9              0 N ACETYL ALANINEGLYCINE RACEMASE
                   (N(W)ACETYL(W)ALANINEGLYCINE(W)RACEMASE)

=> S N ACETYL ALANINE RACEMASE
        2634107 N
         139553 ACETYL
             61 ACETYLS
         139587 ACETYL
                   (ACETYL OR ACETYLS)
         116922 ALANINE
           1508 ALANINES
         117538 ALANINE
                   (ALANINE OR ALANINES)
```

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          1152 RACEMASE
           161 RACEMASES
          1174 RACEMASE
                  (RACEMASE OR RACEMASES)
L10          0 N ACETYL ALANINE RACEMASE
                  (N(W)ACETYL(W)ALANINE(W)RACEMASE)

=> S N ACETYL METHIONINE RACEMASE
       2634107 N
        139553 ACETYL
            61 ACETYLS
        139587 ACETYL
                  (ACETYL OR ACETYLS)
         80119 METHIONINE
           470 METHIONINES
         80283 METHIONINE
                  (METHIONINE OR METHIONINES)
          1152 RACEMASE
           161 RACEMASES
          1174 RACEMASE
                  (RACEMASE OR RACEMASES)
L11          0 N ACETYL METHIONINE RACEMASE
                  (N(W)ACETYL(W)METHIONINE(W)RACEMASE)

=> S N ACEYLAMINO ACID RACEMASE
       2634107 N
             8 ACEYLAMINO
       3736956 ACID
       1409654 ACIDS
       4198044 ACID
                  (ACID OR ACIDS)
          1152 RACEMASE
           161 RACEMASES
          1174 RACEMASE
                  (RACEMASE OR RACEMASES)
L12          0 N ACEYLAMINO ACID RACEMASE
                  (N(W)ACEYLAMINO(W)ACID(W)RACEMASE)

=> S N ACYLAMINO ACID RACEMASE
       2634107 N
          9747 ACYLAMINO
       3736956 ACID
       1409654 ACIDS
       4198044 ACID
                  (ACID OR ACIDS)
          1152 RACEMASE
           161 RACEMASES
          1174 RACEMASE
                  (RACEMASE OR RACEMASES)
L13         18 N ACYLAMINO ACID RACEMASE
                  (N(W)ACYLAMINO(W)ACID(W)RACEMASE)

=> S N CARBAMOYL AMINO ACID
       2634107 N
         22417 CARBAMOYL
             9 CARBAMOYLS
         22421 CARBAMOYL
                  (CARBAMOYL OR CARBAMOYLS)
        953125 AMINO
            43 AMINOS
        953143 AMINO
                  (AMINO OR AMINOS)
       3736956 ACID
       1409654 ACIDS
       4198044 ACID
                  (ACID OR ACIDS)
L14         40 N CARBAMOYL AMINO ACID
                  (N(W)CARBAMOYL(W)AMINO(W)ACID)

=> S L14 AND L13
L15          0 L14 AND L13
```

=> S L6,L14
L16 42 (L6 OR L14)

=> D L6 1-2 CBIB ABS;D L14 1-40 CBIB ABS

L6 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2003 ACS on STN
2002:291802 Document No. 136:308627 Method for producing enantiomerically enriched amino acids from N-substituted amino acids. Bommarius, Andreas; Verseck, Stefan; Drauz, Karlheinz (Degussa A.-G., Germany). Eur. Pat. Appl. EP 1197563 A1 20020417, 12 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (German). CODEN: EPXXDW. APPLICATION: EP 2001-124428 20011011. PRIORITY: DE 2000-10050123 20001011.
AB A process is provided for the prodn. of enantiomerically enriched amino acids. The envisioned process employs a ***N*** - ***acetyl*** - ***amino*** ***acid*** ***racemase*** in conjunction with an amino acid acylase.

L6 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2003 ACS on STN
2001:634531 Document No. 136:258038 Analysis of the chromosome sequence of the legume symbiont Sinorhizobium meliloti strain 1021. Capela, Delphine; Barloy-Hubler, Frederique; Gouzy, Jerome; Bothe, Gordana; Ampe, Frederic; Batut, Jacques; Boistard, Pierre; Becker, Anke; Boutry, Marc; Cadieu, Edouard; Dreano, Stephane; Gloux, Stephanie; Godrie, Therese; Goffeau, Andre; Kahn, Daniel; Kiss, Erno; Lelaure, Valerie; Masuy, David; Pohl, Thomas; Portetelle, Daniel; Puhler, Alfred; Purnelle, Benedicte; Ramsperger, Ulf; Renard, Clotilde; Thebault, Patricia; Vandenbol, Micheline; Weidner, Stefan; Galibert, Francis (Laboratoire de Biologie Moleculaire des Relations Plantes-Microorganismes, Unite Mixte de Recherche (UMR) 215 Centre National de la Recherche Scientifique (CNRS), Institut National de la Recherche Agronomique, Chemin, Tolosan, F-31326, Fr.). Proceedings of the National Academy of Sciences of the United States of America, 98(17), 9877-9882 (English) 2001. CODEN: PNASA6. ISSN: 0027-8424. Publisher: National Academy of Sciences.
AB Sinorhizobium meliloti is an .alpha.-proteobacterium that forms agronomically important N2-fixing root nodules in legumes. We report here the complete sequence of the largest constituent of its genome, a 62.7% GC-rich 3654,135-bp circular chromosome. Annotation allowed assignment of a function to 59% of the 3341 predicted protein-coding ORFs, the rest exhibiting partial, weak, or no similarity with any known sequence. Unexpectedly, the level of reiteration within this replicon is low, with only two genes duplicated with more than 90% nucleotide sequence identity, transposon elements accounting for 2.2% of the sequence, and a few hundred short repeated palindromic motifs (RIME1, RIME2, and C) widespread over the chromosome. Three regions with a significantly lower GC content are most likely of external origin. Detailed annotation revealed that this replicon contains all housekeeping genes except two essential genes that are located on pSymB. Amino acid/peptide transport and degrdn. and sugar metab. appear as two major features of the S. meliloti chromosome. The presence in this replicon of a large no. of nucleotide cyclases with a peculiar structure, as well as of genes homologous to virulence determinants of animal and plant pathogens, opens perspectives in the study of this bacterium both as a free-living soil microorganism and as a plant symbiont.

L14 ANSWER 1 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
2003:313053 Document No. 139:145702 A new biocatalytic route to enantiopure ***N*** - ***carbamoyl*** ***amino*** ***acids*** by fast enzyme screening. Trauthwein, Harald; May, Oliver; Dingerdissen, Uwe; Buchholz, Stefan; Drauz, Karlheinz (Project House Catalysis, Industriepark Hoechst G830, Degussa AG, Frankfurt a. M., D-65926, Germany). Tetrahedron Letters, 44(19), 3737-3739 (English) 2003. CODEN: TELEAY. ISSN: 0040-4039. Publisher: Elsevier Science Ltd..
AB The enantioselective enzymic deamidation of (rac)- ***N*** - ***carbamoyl*** ***amino*** ***acid*** amides (Cbm-AA-NH2) to enantiopure (L)- ***N*** - ***carbamoyl*** ***amino*** ***acids*** (Cbm-AA-OH) is described for the first time. Via fast screening methods of biocatalysts several proteases like Chirazyme P1,

Chirazyme P2 and Subtilisin were identified, which give conversions of up to 47% and >98% ee. This conversion is most productive on aliph. and primary amino acids.

L14 ANSWER 2 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN

2003:49706 Document No. 138:133124 Crystallization and preliminary x-ray diffraction analysis of a thermostable D-hydantoinase from mesophilic Bacillus sp. AR9. Agrawal, V.; Sharma, R.; Vohra, R. M.; Kishan, K. V. R. (Institute of Microbial Technology, Chandigarh, 160 036, India). Acta Crystallographica, Section D: Biological Crystallography, D58(12), 2175-2176 (English) 2002. CODEN: ABCRE6. ISSN: 0907-4449. Publisher: Blackwell Munksgaard.

AB D-Hydantoinase (I) catalyzes the conversion of DL-hydantoin derivs. to the corresponding optically pure ***N*** - ***carbamoyl*** ***amino*** ***acids*** , the 1st step in the industrial prepn. of optically pure amino acids using biol. catalysts. A thermostable I from mesophilic Bacillus sp. AR9 was crystd. in 3 different crystal forms. The hexagonal-faced crystals were the best looking, but did not diffract. One of the crystal forms was star-shaped and appeared to be twinned, but diffracted as a single crystal to a resoln. of 2.3 .ANG.. These crystals belonged to space group P64 and had unit-cell parameters a = b = 129.55, c = 102.86 .ANG., and .alpha. = .beta. = 90, .gamma. = 120.degree..

L14 ANSWER 3 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN

2003:4914 Document No. 138:68921 A D-hydantoinase of Arthrobacter and manufacture of an active form of the enzyme for use in the manufacture of ***N*** - ***carbamoyl*** ***amino*** ***acids*** . Bommarius, Andreas; Drauz, Karlheinz; May, Oliver; Siemann-Herzberg, Martin; Syldatk, Christoph; Werner, Markus; Altenbuchner, Josef (Degussa A.-G., Germany). Eur. Pat. Appl. EP 1270720 A2 20030102, 26 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (German). CODEN: EPXXDW. APPLICATION: EP 2002-12593 20020606. PRIORITY: DE 2001-10130169 20010622.

AB A D-hydantoinase is identified in Arthrobacter crystallopoietes and characterized for use in the manuf. of D-amino acids from hydantoins. The gene encoding the enzyme is cloned and expressed to manuf. the enzyme. The enzyme is recovered in active form by cultivating the bacterium in a medium contg. a divalent metal cation, preferably Zn2+. The protein was purified 19.8-fold (29% yield) and amino acid sequence-derived degenerate primers used to clone the gene. The gene (hyuD) was placed under control of the prior art rhamnose-regulated promoter in the expression vector pJOE4036. Induction of gene expression with rhamnose increased the level of D-hydantoinase activity, but when the culture contained a raised level of zinc, the activity was raised 12-fold.

L14 ANSWER 4 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN

2002:793745 Document No. 137:306628 Cloning, characterization and use of D-hydantoinase from Ochrobactrum anthropi. Politino, Michael; Tonzi, Sean M.; Romancik, Guna; Usher, John J.; Lowe, David A. (Bristol-Myers Squibb Company, USA). PCT Int. Appl. WO 2002081626 A2 20021017, 50 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2002-US10437 20020403. PRIORITY: US 2001-PV281150 20010403.

AB The present invention relates to a novel D-hydantoinase from Ochrobactrum anthropi that enantioselectively hydrolyzes D-hydantoins to their corresponding D- ***N*** - ***carbamoyl*** - ***amino*** ***acids*** ; nucleic acids that encode for the enzyme; expression vectors including the nucleic acids; and host cells capable of expressing the enzyme. Genomic DNA sequence encoding the O. anthropi D-hydantoinase and the encoded amino acid sequence of the enzyme are disclosed. Expression of the gene for D-hydantoinase in E. coli, immobilization of native and recombinant D-hydantoinase, and use of the O. anthropi D-hydantoinase for stereoselective conversion of D-hydantoins is described.

L14 ANSWER 5 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
2001:488298 Document No. 135:273175 A pH-dependent cyanate reactivity model: application to preparative N-carbamoylation of amino acids. Taillades, Jacques; Boiteau, Laurent; Beuzelin, Isabelle; Lagrille, Olivier; Biron, Jean-Philippe; Vayaboury, Willy; Vandenabeele-Trambouze, Odile; Giani, Olivia; Commeyras, Auguste (Organisation Moleculaire - Evolution et Materiaux Fluores, Chemistry Department, University of Montpellier 2, Montpellier, 34095, Fr.). Journal of the Chemical Society, Perkin Transactions 2 (7), 1247-1254 (English) 2001. CODEN: JCSPGI. ISSN: 1472-779X. OTHER SOURCES: CASREACT 135:273175. Publisher: Royal Society of Chemistry.

AB Recent developments in peptide synthesis have underlined the importance of optimizing, on a preparative scale, the N-carbamoylation of amino acids by aq. cyanate. To this purpose, a theor. model of aq. cyanate reactivity was designed. The parameters of the model were evaluated, for various pH and temps., from a crit. survey of the literature, together with addnl. exptl. data. Computer-simulated kinetics based on this model showed the reaction efficiency to be significantly dependent on pH, and suggested optimum conditions to be moderate temps. and pH 8.5-9. Discussion of the practical convenience of these theor. results led us to prefer 40-50 .degree.C and a pH range of 7-8 as reaction conditions, thus maintaining reaction times within a few hours. Various ***N*** - ***carbamoyl*** ***amino*** ***acids*** (ureido derivs. of glycine, L-valine, L-alanine, L-leucine, DL-methionine, N.vepsiln.-trifluoroacetyl-L-lysine, .beta.-alanine)were thus successfully synthesized on the gram to kilogram scales.

L14 ANSWER 6 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
2001:127980 Document No. 134:340665 Separative preparation of the four stereoisomers of .beta.-methylphenylalanine with ***N*** - ***carbamoyl*** ***amino*** ***acid*** amidohydrolases. Ogawa, J.; Ryono, A.; Xie, S.-X.; Vohra, R. M.; Indrati, R.; Akamatsu, M.; Miyagawa, H.; Ueno, T.; Shimizu, S. (Division of Applied Life Sciences, Graduate School of Agriculture, Kyoto University, Sakyo-ku, Kyoto, 606-8502, Japan). Journal of Molecular Catalysis B: Enzymatic, 12(1-6), 71-75 (English) 2001. CODEN: JMCEF8. ISSN: 1381-1177. OTHER SOURCES: CASREACT 134:340665. Publisher: Elsevier Science B.V..

AB The selective prepn. of the four stereoisomers of .beta.-methylphenylalanine (Mphe) from mixts. of the four stereoisomers of N-carbamoyl-.beta.-methylphenylalanine (NCMphe) with N-carbamoyl-L- and D-amino acid amidohydrolases (carbamoylases) was developed. D-Carbamoylase specifically hydrolyzed threo-D-NCMphe with a little side activity toward erythro-D-NCMphe. Thus, threo-D-Mphe was produced with high optical purity from a mixt. of the four stereoisomers of NCMphe. L-Carbamoylase specifically produced threo-L-Mphe from a mixt. of the four stereoisomers of NCMphe. Hydrolysis of erythro-DL-NCMphe with D-carbamoylase gave erythro-D-Mphe, and the remaining erythro-L-NCMphe was chem. hydrolyzed to give erythro-L-Mphe.

L14 ANSWER 7 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
2001:127979 Document No. 134:350294 Cyclic ureide and imide metabolism in microorganisms producing a D-hydantoinase useful for D-amino acid production. Soong, C.-L.; Ogawa, J.; Shimizu, S. (Division of Applied Life Sciences, Graduate School of Agriculture, Kyoto University, Sakyo-ku, Kyoto, 606-8502, Japan). Journal of Molecular Catalysis B: Enzymatic, 12(1-6), 61-70 (English) 2001. CODEN: JMCEF8. ISSN: 1381-1177. Publisher: Elsevier Science B.V..

AB A review with 36 refs. The microbial transformation of DL-5-monosubstituted hydantoins has been applied to industrial scale prodn. of optically active amino acids. Hydantoinase and ***N*** - ***carbamoyl*** ***amino*** ***acid*** amidohydrolase, which are the key enzymes in this transformation, from various microorganisms have been studied extensively. Blastobacter sp. A17p-4, which was isolated for D-amino acid prodn. through hydantoin transformation, shows not only diverse cyclic ureide-metabolizing activities including those of D-hydantoinase and N-carbamoyl-D-amino acid amidohydrolase, but also cyclic imide-metabolizing activities. A recent study revealed the participation of D-hydantoinase in the metab. of cyclic imides and the existence of novel enzymes, imidase and half-amidase, in this bacterium. D-Hydantoinase functions in the metab. of bulky cyclic imides, while

imidase functions in that of simple cyclic imides in combination with half-amidase, which functions in the hydrolysis of the imidase reaction products, half-amides. Imidase and half-amidase are different from reported cyclic-amide-metabolizing enzymes, and are widely found in bacteria, yeasts and molds.

L14 ANSWER 8 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
2000:709239 Document No. 134:29662 Stereoselective synthesis using hydantoinases and carbamoylases. Ogawa, Jun; Shimizu, Sakayu (Division of Applied Life Sciences, Graduate School of Agriculture, Kyoto University, Kyoto, Japan). Stereoselective Biocatalysis, 1-21. Editor(s): Patel, Ramesh N. Marcel Dekker, Inc.: New York, N. Y. (English) 2000. CODEN: 69ALWO.
AB A review with 78 refs. A variety of hydantoin-hydrolyzing enzymes and ***N*** - ***carbamoyl*** ***amino*** ***acid*** aminohydrolases are involved in hydantoin transformations. The combinations of these enzymes provide a variety of processes for the prodn. of optically pure .alpha.-amino acids.

L14 ANSWER 9 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
2000:520535 Document No. 133:252690 Microbial and enzymic synthesis of optically pure D- and L-3-trimethylsilyl-alanine by deracemization of D,L-5-trimethylsilylmethyl-hydantoin. Pietzsch, Markus; Waniek, Thomas; Smith, Richard J.; Bratovanov, Svetoslav; Bienz, Stefan; Syldatk, Christoph (Institute of Biochemical Engineering, University of Stuttgart, Stuttgart, D-70569, Germany). Monatshefte fuer Chemie, 131(6), 645-653 (English) 2000. CODEN: MOCMB7. ISSN: 0026-9247. Publisher: Springer-Verlag Wien.
AB The stereospecificities of hydantoinases and ***N*** - ***carbamoyl*** ***amino*** ***acid*** amidohydrolases (N-carbamoylases) from different microbial sources were investigated for the stereoselective syntheses of the unnatural silicon-contg. amino acids D- and L-3-trimethylsilyl-alanine (3) from the resp. racemic hydantoin, D,L-1. In a preparative biotransformation, whole resting cells of Agrobacterium sp. IP I 671, immobilized in a Ca-alginate matrix, were used for the synthesis of amino acid D-3 in 88% yield and 95% enantiomeric excess. Since the purified D-N-carbamoylase from Agrobacterium sp. IP I 671 was shown to be 100% D-selective, the enantiomeric purity of 95% of D-3 arising from the transformation with the immobilized cells must be explained by the participation of a further, L-selective N-carbamoylase or, which is more likely, by racemization of the final hydrolysis product by the action of an amino acid racemase. Isolated hydantoinases from Bacillus thermoglucosidasius, Thermus sp., Arthrobacter aurescens DSM 3745, and Arthrobacter crystallopoietes DSM 20117 turned out to be stereospecific for the conversion of the D-form of hydantoin D,L-1. The enantiomerically pure L-form of 3 was also prepd. It was synthesized from racemic ***N*** - ***carbamoyl*** ***amino*** ***acid*** , D,L-2, by enantiomer-specific hydrolysis of the L-form in presence of L-N-carbamoylase from Arthrobacter aurescens DSM 3747.

L14 ANSWER 10 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
2000:309668 Document No. 132:305010 A novel amidase (half-amidase) for half-amide hydrolysis involved in the bacterial metabolism of cyclic imides. Soong, Chee-Leong; Ogawa, Jun; Shimizu, Sakayu (Division of Applied Life Sciences, Graduate School of Agriculture, Kyoto University, Kyoto, 606-8502, Japan). Applied and Environmental Microbiology, 66(5), 1947-1952 (English) 2000. CODEN: AEMIDF. ISSN: 0099-2240. Publisher: American Society for Microbiology.
AB A novel amidase involved in bacterial cyclic imide metab. was purified from Blastobacter sp. strain A17p-4. The enzyme functions physiol. in the 2nd step of cyclic imide degrdn., i.e., the hydrolysis of monoamidated dicarboxylates (half-amides) to dicarboxylates and NH3. Enzyme prodn. was enhanced by cyclic imides such as succinimide and glutarimide, but not by amide compds. which are conventional substrates and inducers of known amidases. The purified amidase showed high catalytic efficiency toward half-amides such as succinamic acid (Km = 6.2 mM; kcat = 5.76 s-1) and glutaramic acid (Km = 2.8 mM; kcat = 2.23 s-1). However, the substrates of known amidases such as short-chain (C2 to C4) aliph. amides, long-chain (above C16) aliph. amides, amino acid amides, aliph. diamides, .alpha.-keto acid amides, ***N*** - ***carbamoyl*** ***amino*** ***acids*** , and aliph. ureides were not substrates for the enzyme.

Based on its high specificity toward half-amides, the enzyme was named half-amidase. This half-amidase exists as a monomer with a mol. wt. of 48 kDa and was strongly inhibited by heavy metal cations and SH group reagents.

L14 ANSWER 11 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1999:428433 Document No. 131:195942 ***N*** - ***Carbamoyl*** ***amino*** ***acid*** solid-gas nitrosation by NO/NOx: a new route to oligopeptides via .alpha.-amino acid N-carboxyanhydride. Prebiotic implications. Taillades, Jacques; Collet, Helene; Garrel, Laurence; Beuzelin, Isabelle; Boiteau, Laurent; Choukroun, Henri; Commeyras, Auguste (Organisation Moleculaire-Evolution et Materiaux Fluores, Chemistry Department, University of Montpellier II, Montpellier, 34095, Fr.). Journal of Molecular Evolution, 48(6), 638-645 (English) 1999. CODEN: JMEVAU. ISSN: 0022-2844. Publisher: Springer-Verlag New York Inc..
AB .alpha.- ***N*** - ***Carbamoyl*** ***amino*** ***acid*** (CAA), whose conditions of formation in a prebiotic hydrosphere have been described previously (Taillades et al. 1998), could have been an important intermediate in prebiotic peptide synthesis through reaction with atm. NOx. Nitrosation of solid CAA (glycine or valine deriv.) by a 4/1 NO/O2 gaseous mixt. (1 atm) yields N-carboxyanhydride (NCA) quant. in less than 1 h at room temp. The crude solid NCA undergoes quant. oligomerization (from trimer to nonamer under the conditions we used) when treated with a (bi)carbonate aq. buffer at pH 9. We therefore suggest that part of the prebiotic amino acid activation/polymn. process may have taken place in a dry phase ("drying-lagoon" scenario).

L14 ANSWER 12 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1999:325210 Document No. 131:155052 Hydantoinases and carbamoylases of thermophilic bacteria. Sakanyan, Vehary; Weigel, Pierre; Lecocq, Michele; Marc, Frederic; Batisse, Nadine (Unite de Recherche sur la Biocatalyse, Laboratoire de Biotechnologie, Faculte des Sciences et Techniques, Universite de Nantes, Nantes, 44322, Fr.). Recent Research Developments in Microbiology, 2(Pt. 2), 553-565 (English) 1998. CODEN: RDMIFR. Publisher: Research Signpost.
AB A review with 42 refs. on the enzymol. and genetics of thermostable hydantoinases and carbamoylases of thermophilic bacteria as potential biocatalysts for large-scale prodn. on proteinogenic and nonproteinogenic amino acids and derivs. Prodn. of optically pure amino acids from racemic hydantoins is based on two-steps biocatalytic process: (i) the enantioselective ring opening by cyclic amidohydrolases (hydantoinases) and (ii) the hydrolysis of the formed ***N*** - ***carbamoyl*** ***amino*** ***acids*** by corresponding stereospecific amino acid amidohydrolases (N-carbamoylases). High hydantoinase and carbamoylase activities have been detected in strains of Bacillus stearothermophilus, a genus known by its diversity. The hydantoinase (hyd) and N-carbamoylase (amaB) genes have been cloned and characterized from several B. stearothermophilus strains. Similar enzymes appear to exist in some extreme thermophiles as well. The B. stearothermophilus thermostable hydantoinase was found to be non-stereospecific, however, exhibiting higher D- than L-stereospecificity at the used conditions. Genetic and enzymic data prove that the described hydantoinase activity is detd. by dihydropyrimidinase, the enzyme of pyrimidine catabolism. The B. stearothermophilus L-carbamoylase and L-aminoacylase are encoded by a bicistronic ama operon. Overexpressed D,L-hydantoinase and L-N-carbamoylase enabled the resoln. of pure L-amino acids from D,L-hydantoins at high temps. in a reconstituted process.

L14 ANSWER 13 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1999:113005 Document No. 131:83654 Cloning, nucleotide sequence and expression of a new L-N-carbamoylase gene from Arthrobacter aurescens DSM 3747 in E. coli. Wilms, Burkhard; Wiese, Anja; Syldatk, Christoph; Mattes, Ralf; Altenbuchner, Josef; Pietzsch, Markus (Institute of Industrial Genetics, University of Stuttgart, Stuttgart, 70569, Germany). Journal of Biotechnology, 68(2,3), 101-113 (English) 1999. CODEN: JBITD4. ISSN: 0168-1656. Publisher: Elsevier Science Ireland Ltd..
AB An L- ***N*** - ***carbamoyl*** ***amino*** ***acid*** amidohydrolase (L-N-carbamoylase) from Arthrobacter aurescens DSM 3747 was cloned in E. coli and the nucleotide sequence was detd. After expression of the gene in E. coli the enzyme was purified to homogeneity and characterized. The enzyme was shown to be strictly L-specific and

exhibited the highest activity in the hydrolysis of .beta.-aryl substituted N.alpha.-carbamoyl-alanines as e.g. N-carbamoyl-tryptophan. Carbamoyl derivs. of .beta.-alanine and charged aliph. amino acids were not accepted as substrates. The N-carbamoylase of A. aurescens DSM 3747 differs from all known enzymes with respect to its substrate specificity although amino acid sequence identity scores of 35-38% to other N-carbamoylases have been detected. The enzyme consists of two subunits of 44.000 Da, and has an isoelec. point of 4.3. The optima of temp. and pH were detd. to be 50.degree.C and pH 8.5 resp. At 37.degree.C the enzyme was completely stable for several days.

L14 ANSWER 14 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1998:232990 Document No. 129:14148 Papain catalyzed hydantoin hydrolysis in the synthesis of amino acids. Rai, Rekha; Taneja, Veena (Department of Biochemistry, Faculty of Science, Banaras Hindu University, Varanasi, 221 005, India). Biochemical and Biophysical Research Communications, 244(3), 889-892 (English) 1998. CODEN: BBRCA9. ISSN: 0006-291X. Publisher: Academic Press.
AB Papain has been shown, for the first time, to exhibit hydantoinase activity. It hydrolyzes the 5-mono and 5,5'-disubstituted hydantoins with linear and cyclic substituents, with a higher activity for the latter, to the corresponding ***N*** - ***carbamoyl*** ***amino*** ***acids*** , which on chem. hydrolysis yield the corresponding amino acids. The upscaling of this simple procedure could be a major break-through for amino acid synthesis in chem. and pharmaceutical industries.

L14 ANSWER 15 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1997:491574 Document No. 127:92191 Thermostable mutants of D-N-.alpha.-carbamoylase with normal catalytic activity for manufacture of D-amino acids from ***N*** - ***carbamoyl*** ***amino*** ***acids*** . Grifantini, Renata; Carpani, Giovanna; Galli, Giuliano; Grandi, Guido (Eniricerche S.P.A., Italy). Eur. Pat. Appl. EP 780473 A2 19970625, 19 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, LI, LU, NL, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1996-118671 19961121. PRIORITY: IT 1995-MI2700 19951221.
AB Amino acid-substituted thermostable mutants of D-N-.alpha.-carbamoylase that have a normal or increased catalytic activity are described for use in the manuf. of D-amino acids for use in sweetener manuf. from carbamoyl amino acids. Specific amino acids of the carbamoylase of Agrobacterium radiobacter that can be substituted to increase thermostability without adverse effects on catalytic function are identified. The construction of an operon contg. genes for a carbamoylase and a hydantoinase is described.

L14 ANSWER 16 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1997:68858 Document No. 126:168159 Diversity and versatility of microbial hydantoin-transforming enzymes. Ogawa, Jun; Shimizu, Sakayu (Department of Agricultural Chemistry, Faculty of Agriculture, Kyoto University, Kyoto, 606, Japan). Journal of Molecular Catalysis B: Enzymatic, 2(4-5), 163-176 (English) 1997. CODEN: JMCEF8. ISSN: 1381-1177. Publisher: Elsevier.
AB A review with 59 refs. Microbial hydantoin transformation has been applied to produce optically active amino acids. The transformation involves ring-opening hydrolysis of cyclic ureides and successive hydrolysis of ***N*** - ***carbamoyl*** ***amino*** ***acids*** . The enzymes catalyzing these two hydrolytic reactions were purified from various microorganisms and characterized. In the ***N*** - ***carbamoyl*** ***amino*** ***acid*** hydrolysis, three enzymes, N-carbamoyl-D-amino acid amidohydrolase, N-carbamoyl-L-amino acid amidohydrolase and .beta.-ureidopropionase, are involved. The former two enzymes only hydrolyze N-carbamoyl-.alpha.-amino acids D- or L-stereospecifically, resp. The last one acts upon N-carbamoyl-.alpha.-, -.beta.- and -.gamma.-amino acids, and shows L-stereospecificity to N-carbamoyl-.alpha.-amino acids. A variety of enzymes are also involved in cyclic ureide hydrolysis. D-Hydantoinase hydrolyzes 5-monosubstituted hydantoins D-stereospecifically and preferably hydrolyzes dihydropyrimidines. Imidase, which acts well upon cyclic imides, also hydrolyzes dihydropyrimidines. N-Methylhydantoin amidohydrolase hydrolyzes 5-monosubstituted hydantoins L-stereospecifically with concomitant hydrolysis of ATP to ADP. Dihydroorotase hydrolyzes six-membered cyclic ureide, dihydroorotate, L-stereospecifically. The

strict stereospecificities of these hydantoin-transforming enzymes contribute to produce optically active compds.

L14 ANSWER 17 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1994:650817 Document No. 121:250817 Evaluation of pyrimidine- and hydantoin-degrading enzyme activities in aerobic bacteria. Ogawa, Jun; Kaimura, Takeshi; Yamada, Hideaki; Shimizu, Sakayu (Department of Agricultural Chemistry, Kyoto University, Kitashirakawa-Oiwakecho, Sakyo-ku, Kyoto, 606, Japan). FEMS Microbiology Letters, 122(1-2), 55-60 (English) 1994. CODEN: FMLED7. ISSN: 0378-1097.
AB Enzyme activities responsible for reductive pyrimidine base degrdn. by aerobic bacteria, which produce hydantoin-degrading enzymes, were investigated. Pseudomonas putida IFO 12996, which is a D-stereospecific hydantoinase producer, has dihydropyrimidinase activity, and Comamonas sp. E222c and Blastobacter sp. A17p-4, which are N-carbamoyl-D-amino acid amidohydrolase producers, have .beta.-ureidopropionase activity. Blastobacter sp. also possesses both D-stereospecific hydantoinase and dihydropyrimidinase activities. Thus, two amide ring-opening activities and/or two ***N*** - ***carbamoyl*** ***amino*** ***acid*** -hydrolyzing activities coexist in these bacteria. However, the differences of the induction levels of each enzyme activity for the several pyrimidine- and hydantoin-related compds. suggest that these corresponding amide ring-opening or ***N*** - ***carbamoyl*** ***amino*** ***acid*** -hydrolyzing activities are not always catalyzed by the same enzymes.

L14 ANSWER 18 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1994:186123 Document No. 120:186123 Cloning and expression of gene for D-***n*** - ***carbamoyl*** - ***amino*** ***acid*** amidohydrolase and hydantoinase of Agrobacterium. Neal, Robert John; Griffin, Alison Michelle; Scott, Miller O'Neill; Shatzman, Allan Richard; Gorham, Hazel Claire (Smithkline Beecham P.L.C., UK; Smithkline Beecham Corp.). PCT Int. Appl. WO 9400577 A1 19940106, 68 pp. DESIGNATED STATES: W: JP, US; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1993-GB1378 19930630. PRIORITY: GB 1992-13855 19920630; GB 1992-13857 19920630.
AB Processes are provided for the prodn. of carbamoylase which has the capability of converting D-N-carbamoyl (optionally substituted phenyl) glycine into the corresponding D-(optionally substituted phenyl) glycine by expressing the recombinant DNA encoding the carbamoylase gene in a homologous host. Also provided are specific recombinant DNA vectors producing high levels of expression of the carbamoylase and/or a hydantoinase in homologous and heterologous hosts and their use in the prodn. of D-.alpha. amino acids.

L14 ANSWER 19 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1993:494049 Document No. 119:94049 Identification of N-carbamyl amino acids in wines and in yeast cells. Huang, Zhixian; Ough, Cornelius S. (Dep. Vitic. Enol., Univ. California, Davis, CA, 95616-8749, USA). American Journal of Enology and Viticulture, 44(1), 49-55 (English) 1993. CODEN: AJEVAC. ISSN: 0002-9254.
AB N-carbamyl amino acids (NCAAs) were isolated from wines by anion exchange chromatog. Dimethylaminobenzaldehyde (DMAB) was used as color reagent for detection of NCAAs at 438 nm. This color reaction had a detection limit of 0.005 mM and linearity up to 2.5 mM. The isolated NCAAs were further concd. and then qual. identified by silica gel thin layer chromatog. (TLC). TLC results indicated that N-carbamyl aspartate (NC-Asp) and N-carbamyl glutamate (NC-Glu) were found in some of the wines tested. By converting NCAAs into their corresponding amino acid hydantoins, it was possible to det. NCAAs quant. by an automated HPLC method. NC-Asp ranged from 0.147 to 0.783 mM in eight wines. Amts. of 0.1 to 0.2 mM of NC-Asp were also found in wines made from a model grape juice. Very low levels of NC-Asp and NC-Glu were detected in yeast cells grown in the model grape juice.

L14 ANSWER 20 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1993:208183 Document No. 118:208183 N-Carbamoyl-D-amino acid amidohydrolase from Comamonas sp. E222c. Purification and characterization. Ogawa, Jun; Shimizu, Sakayu; Yamada, Hideaki (Dep. Agric. Chem., Kyoto Univ., Kyoto, 606, Japan). European Journal of Biochemistry, 212(3), 685-91 (English) 1993. CODEN: EJBCAI. ISSN: 0014-2956.

AB N-Carbamoyl-D-amino acid amidohydrolase (I) was purified 119-fold, with 36% overall recovery from a cell-free ext. of Comamonas sp. E222c. Purified I was homogeneous as judged by SDS-PAGE. The mol. wt. of native I was 120,000 and that of the subunit was 40,000. Purified I hydrolyzed various N-carbamoyl-D-amino acids to D-amino acids, NH3, and CO2. N-Carbamoyl-D-amino acids having hydrophobic groups served as good substrates for I. The Km and Vmax values for N-carbamoyl-D-phenylalanine were 19.7 mM and 13.1 units/mg, resp., and those for N-carbamoyl-D-p-hydroxyphenylglycine were 13.1 mM and 0.56 units/mg, resp. I strictly recognized the configuration of the substrate and only the D-enantiomer of the ***N*** - ***carbamoyl*** ***amino*** ***acid*** was hydrolyzed. I activity was not significantly affected by N-carbamoyl-L-amino acids and NH3. I was sensitive to SH group reagents and did not require metal ions for its activity. I did not hydrolyze N-carbamoyl-.beta.-alanine or N-carbamoyl-DL-aspartate suggesting that the enzyme is different from the N-carbamoylamide-hydrolyzing enzymes involved in the pyrimidine degrdn. pathway. I did not hydrolyze allantoin and allantoic acid, which are intermediates in purine degrdn., or N-carbamoylsarcosine and citrulline, suggesting that it is a novel N-carbamoylamide amidohydrolase.

L14 ANSWER 21 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1993:5740 Document No. 118:5740 Manufacture of amino acids with Bacillus. Ishikawa, Takahiro; Mukohara, Yukio; Watabe, Takeshi; Nakamura, Hiroaki (Nippon Soda Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 04183387 A2 19920630 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-307222 19901115.
AB Manuf. of L-amino acids from 5-substituted hydantoins or ***N*** - ***carbamoyl*** ***amino*** ***acids*** with Bacillus NS1122A is described. Manuf. of L-methionine with Bacillus NS1122A from DL-5-(2-methylthioethyl)hydantoin was shown.

L14 ANSWER 22 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1992:210237 Document No. 116:210237 Enzymes for preparation of amino acids from 5'-substituted hydantoins or ***N*** - ***carbamoyl*** - ***amino*** ***acids*** . Watabe, Takeshi; Ishikawa, Takahiro; Mukohara, Yukio (Nippon Soda Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03251176 A2 19911108 Heisei, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-137120 19900529. PRIORITY: JP 1990-2786 19900110.
AB The genes for the title enzymes are cloned from Pseudomonas NS671 and expressed in Escherichia coli. The plasmid DNA of Pseudomonas NS671 obtained by std. method was partially restricted with MboI for the construction of a plasmid library on pUC18, and transformed into E. coli. The E. coli recombinant harboring pHPB12 that can convert D- or L-5-(2-methylthioethyl)hydantoin first to N-carbamyl-D or L-methionine and then to L-methionine was selected. The pHPB12 had a 7.5 kb DNA insert that contains 3 open reading frames (ORFs). Based on the deletion expts., 2 of the ORFs encode enzymes responsible for the conversion of D- or L-5-(2-methylthioethyl)hydantoin to N-carbamyl-D- or L-methionine and the third ORF encodes enzyme responsible for the manuf. of L-methionine from the N-carbamyl-L-methionine. The manuf. of methionine with the recombinant E. coli was much higher than that with Pseudomonas NS671.

L14 ANSWER 23 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1989:193355 Document No. 110:193355 Oxidations of some .alpha.-amino acids under Mitsunobu reaction conditions. Kolasa, Teodozyj; Miller, Marvin J. (Dep. Chem., Univ. Notre Dame, Notre Dame, IN, 46556, USA). Tetrahedron Letters, 29(37), 4661-4 (English) 1988. CODEN: TELEAY. ISSN: 0040-4039. OTHER SOURCES: CASREACT 110:193355.
GI

/ Structure 1 in file .gra /

AB Reactions of .alpha.-amino acids with azodicarboxylates and Ph3P results in oxidn. at the .alpha.-carbon. N-Acyl or ***N*** - ***carbamoyl*** ***amino*** ***acid*** esters give azodicarboxylate adducts, e.g. I (R = Ph, R1 = Me, R2 = H, OCH2Ph; R = CO2Et, R1 = Et, R2 = OCH2Ph), whereas free .alpha.-amino acid esters are converted to the corresponding .alpha.-keto esters.

L14 ANSWER 24 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1989:54260 Document No. 110:54260 Mechanism of stereospecific production of L-amino acids from the corresponding 5-substituted hydantoins by Bacillus brevis. Yamashiro, Akihiro; Kubota, Koji; Yokozeki, Kenzo (Cent. Res. Lab., Ajinomoto Co., Inc., Kawasaki, 210, Japan). Agricultural and Biological Chemistry, 52(11), 2857-63 (English) 1988. CODEN: ABCHA6. ISSN: 0002-1369.

AB The mechanism of stereospecific prodn. of L-amino acids from the corresponding 5-substituted hydantoins by B. brevis AJ-12299 was studied. The enzymes involved in the reaction were partially purified by DEAE-Toyopearl 650M column chromatog. and their properties were investigated. The conversion of DL-5-substituted hydantoins to the corresponding L-amino acids consisted of the following two successive reactions. The first step was the ring-opening hydrolysis to ***N*** - ***carbamoyl*** ***amino*** ***acids*** catalyzed by an ATP dependent L-5-substituted hydantoin hydrolase. This reaction was stereospecific and the ***N*** - ***carbamoyl*** ***amino*** ***acid*** produced was exclusively the L-form. N-Carbamoyl-L-amino acid was also produced from the D-form of 5-substituted hydantoin, which suggests that spontaneous racemization occurred in the reaction mixt. In the second step, N-carbamoyl-L-amino acid was hydrolyzed to L-amino acid by an N-carbamoyl-L-amino acid hydrolase, which was also an L-specific enzyme. The ATP dependency of the L-5-substituted hydantoin hydrolase was supposed to be the limiting factor in the prodn. of L-amino acids from the corresponding 5-substituted hydantoins by this bacterium.

L14 ANSWER 25 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1988:527326 Document No. 109:127326 Manufacture of L-.alpha.-amino acids from hydantoins or N-carbamoyl-.alpha.-amino acids with microorganisms or microbial enzymes. Hoeltmann, Wilhelm; Wagner, Fritz; Cotoras, Davor; Syldatk, Christoph; Dombach, Giselher; Gross, Christiane; Gross, Christiane Dipl Biol; Wagner, Thomas (Ruetgerswerke A.-G., Fed. Rep. Ger.). Ger. Offen. DE 3712539 A1 19880211, 6 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1987-3712539 19870413. PRIORITY: DE 1986-3625012 19860724.

AB Microorganisms or exts. therefrom contg. the enzymes hydantoinase-DL-carbamoyl-.alpha.-amino acid racemase and L-N-carbamoyl-.alpha.-amino acid amidohydrolase, are used to prep. L-.alpha.-amino acids from 5-substituted hydantoins or N-carbamoyl-.alpha.-amino acids. Novel Coryneform bacteria were indentified and isolated based on their growth on DL-3-methyleneindolyl-5-hydantoin. One isolate, CW3, 20 g wet wt. was incubated for 24 h at 27.degree. with this substrate 80 mmol. The cell-free supernatant contained L-tryptophan 28 mmol (HPLC detn.).

L14 ANSWER 26 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1987:477800 Document No. 107:77800 Hydrogenation of unsaturated hydantoins to saturated hydantoins and/or ring-opened derivatives thereof. Mirviss, Stanley B. (Stauffer Chemical Co., USA). U.S. US 4650876 A 19870317, 7 pp. Cont.-in-part of U.S. Ser. No. 641,886, abandoned. (English). CODEN: USXXAM. APPLICATION: US 1985-804216 19851203. PRIORITY: US 1984-641886 19840817.

GI

/ Structure 2 in file .gra /

AB Unsatd. hydantoins [I; A = cycloalkyl, cycloalkenyl, alkylthio, (substituted) alkyl, alkenyl, heterocyclyl, (substituted) Ph, naphthyl; R1, R2 = H, alkyl, acyl, aryl, amino] were hydrogenated using 0.3-50% Raney Ni (based on wt. of hydantoin) as catalyst and H2O contg. 100-300 mol% NaOH as solvent. Thus, 5-benzalhydantoin was hydrogenated using 5 wt.% Raney Ni in H2O contg. 150 mol% NaOH at 40.degree. and 0 psig h for 19 h to give N-carbamylphenylalanine accompanied by a trace of starting material.

L14 ANSWER 27 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1987:476090 Document No. 107:76090 Microbial production of D-.alpha.-amino

acids. Takahashi, Hideyuki; Takahashi, Satomi; Ohashi, Takehisa; Yoneda, Koji; Watanabe, Kiyoshi (Kanegafuchi Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62025990 A2 19870203 Showa, 15 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-170708 19860719.

AB D-N-Carbamoyl-.alpha.-amino acids RCH(CO2H)NHCONH2(R = Ph, OH-substituted Ph, alkyl, substituted alkyl or thienyl) are contacted with carbamoyl group-removing Aerobacter, Aeromonas, Brevibacterium, Bacillus, Flavobacterium, Sarcina or Serratia species or their enzyme prepns. to produce D-.alpha.-amino acids RCH(NH2)CO2H (R = same as above). Thus, B. alvei IFO 3343 was shake-cultured in a medium contg. meat ext., peptone, NaCl, MnCl2 and D-N-carbamoylphenylglycine at 33.degree. for 48 h. The cells were washed, sonicated, and the ext. was incubated with D-N-carbamoylphenylglycine at 33.degree. for 24 h to produce D-phenylglycine with 4.8% yield. D-N-Carbamoyl-.alpha.-amino acids are prepd. by microbial degrdn. of 5-substituted hydantoins.

L14 ANSWER 28 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN

1987:438091 Document No. 107:38091 L-Amino acid manufacture by Arthrobacter. Akimoto, Toshiyuki; Watanabe, Mitsuo; Nagasaki, Senkichi; Hirata, Mitsuyoshi (Daiichi Kagaku Yakuhin K. K., Japan). Jpn. Kokai Tokkyo Koho JP 62003792 A2 19870109 Showa, 13 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-141107 19850627.

GI

/ Structure 3 in file .gra /

AB Arthrobacter Converts RCH(CO2H)NHCONH2 or I (R = N-carbamoylamino acid residue or hydantoin residue) to form L-amino acids RCH(NH2)CO2H (R = same as above). Thus, Arthrobacter sp DP-B-1001 was cultured in a medium contg. glucose, yeast ext., polypeptone, meat ext., MgSO4, FeSO4, MnSO4 and 5-indolylmethylhydantoin at 28.degree. for 24 h. The cells were collected and incubated in a medium contg. 0.8 M NH4OH-NH4Cl (pH 8.0) 4 mM FeSO4.7H2O, 4 mM MnSO4.5H2O, and D-N-carbamoylphenylalanine (200 g/L) at 37.degree. for 48 h to produce 3.85 g L-phenylalanine from 100 mL culture.

L14 ANSWER 29 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN

1987:438090 Document No. 107:38090 Novel Arthrobacter sp. DP-B-1001 for L-amino acids production. Akimoto, Toshiyuki; Watanabe, Mitsuo; Nagasaki, Senkichi; Hirata, Mitsuyoshi (Daiichi Kagaku Yakuhin K. K., Japan). Jpn. Kokai Tokkyo Koho JP 62000270 A2 19870106 Showa, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-141105 19850627.

AB Novel Arthrobacter sp. DP-B-1001 converts 5-substituted hydantoins and N-carbamoylamino acids to resp. L-amino acids. Thus, the microorganism was shake-cultured in a medium contg. 5-indodylmethylhydantoin 0.15% glucose 10, yeast ext. 5, polypeptone 5, meat ext. 2, MgSO4.7H2O 0.4, FeSO4.7H2O 0.01, and MnSO4.5H2O 0.01 g/L at 28.degree. for 24 h. The cells were collected, washed and incubated in a medium contg. 0.8 M NH4OH-NH4Cl (pH 8.0) 4 mM FeSO4.7H2O, 4 mM MnSO4.5H2O, and D-N-carbamoylphenylalanine (200 g/L at 37.degree. for 48 h. After centrifugation, the supernatant contained 3.85 g L-phenylalanine/100 mL culture.

L14 ANSWER 30 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN

1987:405729 Document No. 107:5729 L-Amino acid production by novel Arthrobacter DP-B-1002. Akimoto, Toshiyuki; Watanabe, Mitsuo; Nagasaki, Senkichi; Hirata, Mitsuyoshi (Daiichi Kagaku Yakuhin K. K., Japan). Jpn. Kokai Tokkyo Koho JP 62000271 A2 19870106 Showa, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-141106 19850627.

AB Novel Arthrobacter DP-B-1002 converts 5-substituted hydantoins and N-carbamoylamino acids to resp. L-amino acids. Thus, the microorganism was cultured in a medium (pH 7.0) contg. glucose 10 and corn steep liquor 20 g/L at 28.degree. for 30 h. The cells were collected and incubated in a medium contg. CoOAc (1.2 mM, 400 mL) and DL-N-carbamoylphenylalanine (80 g/L, 400 mL) at 37.degree. for 22 h with pH maintaining at 6.7 to produce 24.1 g L-phenylalanine (95% yield).

L14 ANSWER 31 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN

1987:17041 Document No. 106:17041 D-.alpha.-Amino acids from N-carbamoyl-.alpha.-amino acids by Candida. Takeichi, Mamoru; Tawaki,

Shinichiro; Hagiwara, Takashi; Tarukawa, Hitoshi (Mitsui Toatsu Chemicals, Inc., Japan). Jpn. Kokai Tokkyo Koho JP 61177992 A2 19860809 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-18661 19850204.

AB ***N*** - ***Carbamoyl*** - ***amino*** ***acids*** , RCH(NHCONH2)CO2H I (R = Me, Me2CHCH2, MeEtCH, Ph, PhCH2, etc.), incubated with C. vinaria (FERM P-7845) gave corresponding D-.alpha.-amino acids. Thus, the strain was cultivated in a medium contg. glucose 2, DL-isopropylhydantoin 0.9, peptone 1, malt ext. 3, MgSO4.7H2O 0.05, CaCl2.2H2O 0.033, and KH2PO4 0.15% at 28.degree. for 24 h. The cells (30 g/L) were incubated with 10 g I (R = Me2CH) in 1L 0.1M phosphate buffer (pH 7.5) at 36.degree. for 24 h to give 3.9 mg D-valine/mL. Also prepd. were D-serine, D-methionine, D-tyrosine, D-tryptophan, and D-p-hydroxyphenylglycine.

L14 ANSWER 32 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN

1986:586400 Document No. 105:186400 Purification and characterization of a novel enzyme, N-carbamoylsarcosine amidohydrolase, from Pseudomonas putida 77. Kim, Jong Min; Shimizu, Sakayu; Yamada, Hideaki (Dep. Agric. Chem., Kyoto Univ., Kyoto, 606, Japan). Journal of Biological Chemistry, 261(25), 11832-9 (English) 1986. CODEN: JBCHA3. ISSN: 0021-9258.

AB N-Carbamoylsarcosine amidohydrolase (I), a novel enzyme involved in the microbial degrdn. of creatinine in P. putida 77, was purified 27-fold to homogeneity with a 63% overall recovery through simple purifn. procedures, including successive (NH4)2SO4 fractionation, DEAE-cellulose chromatog., and crystn. The relative mol. mass (Mr) of native I estd. by the ultracentrifugal equil. method is 102,000, and the subunit Mr is 27,000. The Km and Vm values for N-carbamoylsarcosine are 3.2 mM and 1.75 units/mg protein, resp. NH3, CO2, and sarcosine were formed stoichiometrically from N-carbamoylsarcosine through the action of the purified I prepn. ***N*** - ***Carbamoyl*** ***amino*** ***acids*** with a Me group or H atom on the amino N atom and possessing glycine, D-alanine, or one of their derivs. as an amino acid moiety served well as substrates for I. N-Carbamoylsarcosine, N-methyl-N-carbamoyl-D-alanine, N-carbamoylglycine, and N-carbamoyl-D-alanine were hydrolyzed at relative rates of 100, 12.8, 9.8, and 7.3, resp., by the enzyme. N-Carbamoyl derivs. of D-tryptophan, D-phenylalanine, and those of some other amino acids, including D-phenylglycine and p-hydroxy-D-phenylglycine, were also hydrolyzed by the enzyme. For the L-isomers of all ***N*** - ***carbamoyl*** ***amino*** ***acids*** tested there was no prodn. of NH3, CO2, or the corresponding amino acids due to the action of the enzyme. Cu2+, Hg2+, and Ag+ inhibited the enzyme strongly, and some SH reagents were also inhibitory.

L14 ANSWER 33 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN

1985:39295 Document No. 102:39295 Packing materials for chromatographic use and their employment in analyzing enantiomeric mixtures. Oi, Naobumi; Kitahara, Hajimu (Sumitomo Chemical Co., Ltd. , Japan). Eur. Pat. Appl. EP 105745 A2 19840418, 43 pp. DESIGNATED STATES: R: CH, DE, FR, GB, IT, LI, NL, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1983-305933 19830930. PRIORITY: JP 1982-173003 19820930; JP 1982-173688 19821001.

AB A packing material for liq. chromatog. comprises an inorg. carrier having hydroxyl groups at the surface thereof, e.g. silica gel, onto which are grafted an organosilane being a urea deriv. obtained by reacting an optically active isocyanate with an aminoalkylsilane, an ***N*** - ***carbamoyl*** ***amino*** ***acid*** deriv. obtained by reacting an optically active amino acid carbamoylated by isocyanate with an aminoalkylsilane or an O-carbamoyl hydroxy acid deriv. obtained by reacting an optically active hydroxy acid carbamoylated by isocyanate with an aminoalkylsilane. This packing material is useful in liq. chromatog. of an enantiomeric mixt. of a compd. having an OH group, a CONH group, a CON group, a COO group, an NHCOO group, an NHCONH group, or an NHCON group bonded to an asym. C atom thereof.

L14 ANSWER 34 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN

1980:92733 Document No. 92:92733 D-Amino acids. Olivieri, Roberto; Viglia, Aurelio; Degen, Ludwig; Angelini, Leonello; Fascetti, Eugenio (SNAM Progetti S.p.A., Italy). Ger. Offen. DE 2920963 19791129, 20 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1979-2920963 19790523.

AB D-Amino acids are produced from a racemic mixt. of ***N*** - ***carbamoyl*** ***amino*** ***acids*** or their hydantoins by the action of an enzyme complex from Agrobacterium NRRL B 11291. Thus,

cells of Agrobacterium that had been grown in a medium contg. meat peptone 5, meat ext. 5, and glucose 3 g/L were washed and added to 100 mL pH 7.7 pyrophosphate buffer contg. 10 g DL-5-phenylhydantoin and was incubated at 40.degree. under a N2 atm. After 200 h, the yield of D-phenylglycine [875-74-1] was complete.

L14 ANSWER 35 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1977:44030 Document No. 86:44030 Amino acids. Cecere, Francesco; Marconi, Walter; Morisi, Franco; Rappuoli, Bruno (SNAM Progetti S.p.A., Italy). Ger. Offen. DE 2615594 19761014, 6 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1976-2615594 19760409.
AB L-H2NCHRCO2H [I; R = Ph(D), Me, CHMe2, CH2CH2SMe, CH2CH2CO2H] were prepd. by oxidizing the corresponding H2NCONHCHRCO2H (II) in the presence of an ion exchange resin. Thus, D-I (R = Ph) was prepd. by treating D-II (R = Ph) with NaNO2 in the presence of Amberlite IR 120 (H+).

L14 ANSWER 36 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1971:108107 Document No. 74:108107 N-Carbamoyl-2-(p-hydroxyphenyl)glycine from leaves of broad bean (Vicia faba). Eagles, J.; Laird, W. M.; Matai, S.; Self, R.; Synge, R. L. M.; Drake, A. F. (Food Res. Inst., Agric. Res. Counc., Norwich, UK). Biochemical Journal, 121(3), 425-30 (English) 1971. CODEN: BIJOAK. ISSN: 0264-6021.
AB DL-2-(p-Hydroxyphenyl)glycine was resolved through the bromocamphorsulfonate to give its D isomer. The N-carbamoyl derivs. of these amino acids were synthesized. CD studies on these and related compds., helped to establish the optical configuration. N-Carbamoyl-DL-2-(p-hydroxyphenyl)glycine was isolated from broad-bean leaves. It amounted to about 0.1% of the leaf dry matter. Racemization may or may not have occurred during the isolation. There were indications of the same compd. in chicory and in Savoy cabbage. Under weakly acidic conditions it was converted to 5-(p-hydroxyphenyl)-hydantoin gradually. Both these compds. yielded 2-(p-hydroxyphenyl)glycine on acid hydrolysis. The occurrence is discussed of 2-phenylglycine derivs. in nature and of ***N*** - ***carbamoyl*** ***amino*** ***acids*** and hydantoins in plants. Gradient elution from anion-exchange resin with HOAc, besides proving useful for the present work, gave useful sepns. of pyrrolidonecarboxylic acid and of some N-acetyl amino acids. This is an abstr. of work some details of which are on deposit at and available from the National Lending Library for Science and Technology, Boston Spa, Yorks. LS23 7BQ, U.K.

L14 ANSWER 37 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1962:68081 Document No. 56:68081 Original Reference No. 56:13181b Carbamoyl derivatives of amino acids of biological importance. II. Technique of separation and determination of N-carbamoylaspartic acid in urine of rat and man. Crokaert, R. (Univ. Libre, Brussels, Belg.). Bulletin de la Societe de Chimie Biologique, 43, 1331-8 (Unavailable) 1961. CODEN: BSCIA3. ISSN: 0037-9042.
AB N-Carbamoylaspartic acid is sepd. and detd. in the same manner as III in the preceding abstr. It was not found in normal human urine. When injected into rats, only a small proportion was excreted unchanged. Numerous refs.

L14 ANSWER 38 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1962:68080 Document No. 56:68080 Original Reference No. 56:13180i,13181a-b Carbamoyl derivatives of amino acids of biological importance. I. Products of catabolism of pyrimidines; techniques of separation and determination in urine of rat and man. Crokaert, R. (Univ. Libre, Brussels, Belg.). Bulletin de la Societe de Chimie Biologique, 43, 1317-29 (Unavailable) 1961. CODEN: BSCIA3. ISSN: 0037-9042.
AB A method is described which makes possible the detn., in urine, of N-carbamoyl-.beta.-alanine (I), N-carbamoyl-.beta.-aminoisobutyric acid (II), and the corresponding dihydropyrimidines, dihydrouracil (III) and dihydrothymine (IV). The method involves a preliminary passage of the urine over Dowex 50 (H+); then the filtrate, contg. III and IV, and the eluate by 4N HCl, contg. I and II, are analyzed by chromatog. on Dowex 50 and Dowex 2, resp. The different compds. are detd. by their reaction with diacetylmonoxime. I and III were found present in rat urine and III in normal human urine. When I and II were injected into rats, only a small proportion was excreted unchanged in the urine.

L14 ANSWER 39 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1957:28315 Document No. 51:28315 Original Reference No. 51:5512b-e The thermodynamics of ionization of amino acids. III. The ionization constants of some N-carbamoylamino acids. King, Edward J. (Columbia Univ.). J. Am. Chem. Soc., 78, 6020-4 (Unavailable) 1956. CODEN: JACSAT. ISSN: 0002-7863.

AB cf. C.A. 50, 8299f. The thermodynamic ionization consts. of 6 ***N*** - ***carbamoyl*** ***amino*** ***acids*** were obtained at 10 temps. from 5 to 50.degree. from measurements of cells without liquid junction. The values of the parameters in -log K = (A/T) - B + CT are: A 1364.94, 1088.10, 1018.65, 1125.63, 1152.77, 1074.06; B 5.0675, 3.5768, 3.3079, 2.9285, 3.1036, 2.6066; C 0.014640, 0.012810, 0.012670, 0.012129, 0.012490, 0.012364 for N-carbamoyl derivs. of glycine, DL-alanine, DL-.alpha.-aminobutyric acid, .alpha.-aminoisobutyric acid, .beta.-alanine, and .gamma.-aminobutyric acid, resp. Hydantoic acid is slightly weaker than acetylglycine, because the dipole moment of the terminal H2NCONH group in the former is slightly farther away from the ionizing proton and tilted at a larger angle than is that of the CH3CONH group of the latter. The carbamoyl group is more effective in orienting H2O mols., so that the entropies of ionization of the carbamoylamino acids are less neg. than those of the acetylamino acids. Substitution of alkyl groups for an .alpha.-H atom is assocd. with decreases in .DELTA.H.degree. and .DELTA.S.degree. that are generally similar to those previously reported. Though there is a linear relation between - log K and the reciprocal of the no. of C atoms that sep. the carboxyl and polar groups, a linear relation for .DELTA.H.degree.or .DELTA.S.degree. is found only if the value for the 1st acid in the series (glycine for the amino acids, hydantoic acid for the carbamoylamino acids) is omitted.

L14 ANSWER 40 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
1955:19753 Document No. 49:19753 Original Reference No. 49:3813i,3814a Chromatography of ***N*** - ***carbamoyl*** ***amino*** ***acids*** (hydantoic acids). Phillips, D. M. P. (Australian Natl. Univ., Canberra). Biochimica et Biophysica Acta, 13, 560-3 (Unavailable) 1954. CODEN: BBACAQ. ISSN: 0006-3002.

AB N Carbamoyl derivs. of 22 .alpha.-amino acids and .alpha.-imino acids were prepd. and their behavior on paper chromatography studied. Three of the N-carbamoylamino acids had not been prepd. previously: N-carbamoyl-DL-threonine, m.185-6.degree. (with foaming), N-carbamoylhistidine, and bis-N,N'carbamoyllysine. Preferred solvents for chromatography were BuOH-AcOH-water and phenol-water. As little as 3.gamma. of the derivs. could be detected with a 4% p-dimethylaminobenzaldehyde in N HCl spray.

Title: US-09-973-712-2

RESULT 1
US-09-624-390-2
; Sequence 2, Application US/09624390
; Patent No. 6372459
; GENERAL INFORMATION:
; APPLICANT: VERSECK, STEFAN
; APPLICANT: KULA, MARIA-REGINA
; APPLICANT: BOMMARIUS, ANDREAS
; APPLICANT: DRAUZ, KARLHEINZ
; TITLE OF INVENTION: N-ACTEYL AMINO ACID RACEMASE
; FILE REFERENCE: 192535US0
; CURRENT APPLICATION NUMBER: US/09/624,390
; CURRENT FILING DATE: 2000-07-27
; PRIOR APPLICATION NUMBER: DE 19935268.2
; PRIOR FILING DATE: 1999-07-27
; NUMBER OF SEQ ID NOS: 7
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 2
; LENGTH: 368
; TYPE: PRT
; ORGANISM: Amycolatopsis orientalis
US-09-624-390-2

Query Match 100.0%; Score 1893; DB 4; Length 368;
Best Local Similarity 100.0%; Pred. No. 2.6e-192;
Matches 368; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Qy       1 VKLSGVELRRVRMPLVAPFRTSFGTQSERELLLVRAVTPAGEGWGECVAMEAPLYSSEYN 60
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1 VKLSGVELRRVRMPLVAPFRTSFGTQSERELLLVRAVTPAGEGWGECVAMEAPLYSSEYN 60

Qy      61 DAAEHVLRNHLIPALLAAEDVTAHKVTPLLAKFKGHRMAKGALEMAVLDAELRAHDRSFA 120
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      61 DAAEHVLRNHLIPALLAAEDVTAHKVTPLLAKFKGHRMAKGALEMAVLDAELRAHDRSFA 120

Qy     121 AELGSTRDSVACGVSVGIMDSIPHLLDVVGGYLDEGYVRIKLKIEPGWDVEPVRQVRERF 180
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     121 AELGSTRDSVACGVSVGIMDSIPHLLDVVGGYLDEGYVRIKLKIEPGWDVEPVRQVRERF 180

Qy     181 GDDVLLQVDANTAYTLGDAPLLSRLDPFDLLLIEQPLEEEDVLGHAELAKRIRTPICLDE 240
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
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Qy     241 SIVSAKAAADAIKLGACQIVNIKPGRVGGYLEARRVHDVCAAHGIAVWCGGMIETGLGRA 300
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     241 SIVSAKAAADAIKLGACQIVNIKPGRVGGYLEARRVHDVCAAHGIAVWCGGMIETGLGRA 300

Qy     301 ANVALASLPGFTLPGDTSASGRFYRTDITEPFVLDAGHLPVPTGPGLGVTPIPDLLDEVT 360
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     301 ANVALASLPGFTLPGDTSASGRFYRTDITEPFVLDAGHLPVPTGPGLGVTPIPDLLDEVT 360

Qy     361 TEKAWIGS 368
           ||||||||
Db     361 TEKAWIGS 368
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